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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/568,683	02/17/2006	Sumi Tanaka	33082M301	2808
441 7590 01/26/2009 SMITH, GAMBRELL & RUSSELL 1130 CONNECTICUT AVENUE, N.W., SUITE 1130 WASHINGTON, DC 20036				
EXAMINER				
KACKAR, RAM N				
ART UNIT		PAPER NUMBER		
1792				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/568,683

Applicant(s)

TANAKA ET AL.

Examiner

Ram N. Kackar

Art Unit

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10/31/2008.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6-13 is/are pending in the application.
4a) Of the above claim(s) 10 and 11 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-4, 6-9 and 12-13 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SI-108)
Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/31/2008 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1-4, 8-9 and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida (JP 2000021957) in view of Nakamura Tsunehiko (JP 2003224044) and further in view of Yamaguchi et al (US 2003/0183341).**

Yoshida teaches a support column provided at a top end portion thereof with a flanged part, and a substrate holding table joined to the flanged part, wherein: the substrate holding table includes a heating mechanism; the substrate holding table is provided in a lower surface thereof with a U-shaped groove extending along an outer circumferential surface of the flanged part; and an inner circumferential surface of the U-shaped groove is connected to the outer circumferential surface of the flanged parts to form a continuous single plane. (See, for example, Fig. 1).

Yoshida further teaches a second groove on the inner side also, since the U shaped groove, in addition to outer circumferential surface could also be on the inner side (English translation Paragraph 9). Yoshida teaches that a large surface area around the junction helps to relieve thermal stress (Paragraphs 9, 20-24). See also Fig 6.

Yoshida teaches a groove formed in a part of a portion, opposing the flanged part, of the lower surface of the substrate holding table (See, for example, Fig. 4, 6) and the flanged part joined to the lower surface of the substrate holding table at an outermost annular area thereof.

Still further Yoshida teaches a curved surface at the joint of the support column (Fig 5 and Fig 6).

Regarding claim 2, Yoshida teaches both an end portion of a profile line of the inner circumferential surface of the U-shaped groove on a side of the flanged part and a profile line of the outer circumferential surface of the flanged part are situated on a single line segment extending in a vertical direction. (See, for example, Fig. 1).

For claim 3, Yoshida teaches the substrate holding structure is made by joining the flanged part and the substrate holding table to each other after forming them individually. (See, for example, Fig. 1).

Regarding claim 8, Yoshida teaches the substrate holding table and the support column are made of ceramics. (See, for example, para. [0017]).

For claim 9, Yoshida teaches a processing vessel connected to an exhaust system, a gas supply system that supplies a process gas into the processing vessel; and the substrate holding structure, as defined in claim 1, arranged in the processing vessel. (See, for example, Fig. 1).

Further, Nakamura Tsunehiko teaches a similar substrate support and teaches an inner second groove (Fig 6) wherein an inner circumferential surface of the flanged part provides an inclined surface, which is inclined such that an inner diameter of the flanged part successively increases as approaching the lower surface of the substrate holding table. (See, for example, Fig. 6). Nakamura further discloses a remaining area of the upper surface of the flanged part located radially inside the outermost annular area separated from the substrate holding part by a space provided by the second groove opposing the flanged part (Fig 6).

Regarding the limitation “wherein the outer surface of the support column having a curvilinear outer surface at a transition part from the support column to the flanged part”, it is noted that Yamaguchi et al disclose curved part at the outer surface of the support column in order to reduce thermal stress and transfer of heat from the susceptor to support column.

It is noted that Yoshida, Nakamura Tsunehiko and Yamaguchi et al teach the features as above, which are useful in reducing thermal stress at the joint of support column and the support table.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have a second groove and incline the inner circumferential surface of the flanged part in Yoshida in order to reduce thermal stress on the joining part.

3. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida (JP 2000021957) in view of Watanabe et al (JP 11-354526).

Yoshida does not teach inner and outer heating-mechanism parts driven by first and second drive power supply system both extending in the support column, respectively.

Watanabe teaches an inner heating-mechanism part 9b and an outer heating-mechanism part 9a formed outside the inner heating-mechanism part; and the inner heating-mechanism part and the outer heating-mechanism part are driven by first and second drive power supply system both extending in the support column, respectively. (See, for example, Fig. 1, 2).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to divide the heater of Yoshida into inner and outer heating mechanism parts.

The suggestion/motivation would have been to increase temperature control. (Watanabe, Abstract).

4. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida (JP 2000021957) in view of Watanabe et al (JP 11-354526) as applied to claim 6 and further in view of Nagasaki (US 6,215,643).

Neither Yoshida nor Watanabe teaches first and second semicircular conductive patterns.

Nagasaki teaches first and second semicircular conductive patterns 4 connected to first and second power supply lines 6; and the first and second conductive patterns substantially cover whole area of the substrate holding table except for gap areas defined between the first conductive pattern and the second conductive pattern. (See, for example, Fig. 1B, 2A).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to utilize semicircular conductive patterns with the teachings of Yoshida and Watanabe

The suggestion/motivation would have been because electrostatic chucks are conventionally employed for holding substrates. (Nagasaki, col. 1, lines 19-26).

None of these references specifically teaches the conductive patterns arranged below the heating mechanism. However, this configuration is merely a rearrangement of parts that is obvious in view of the prior art. See *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950). The ability of the conductive pattern to chuck the substrate actually decreases as the distance increases between the top of the holding structure and the conductive pattern. Hence, the placement of the conductive pattern below the mechanism would actually be deleterious and obvious as compared to the configuration in Nagasaki.

Further, these references do not teach the conductive patterns and heating mechanisms connected to the first and second power supply lines. It would have been obvious to do so because this configuration merely integrates the power supply lines that connect to the respective heater mechanisms and conductive patterns.

Response to Arguments

Applicant's arguments filed 10/31/2008 have been fully considered but they are not persuasive since all the features of these claims contribute to reduction of thermal stress and Yoshida, Nakamura Tsunehiko and Yamaguchi et al disclose different parts of these claims. To combine them in one embodiment for the disclosed advantage of reduction of thermal stress would be obvious.

Conclusion

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571 272 1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ram N Kackar/
Primary Examiner, Art Unit 1792